

## Highlights

# The Virginia Regional Environmental Management System (V-REMS) Stormwater Activities

## Stormwater Activities Goal:

**To reduce stormwater pollution from V-REMS partners' operations, improving water quality in Virginia and the Chesapeake Bay.**



Boy scouts at the Defense Supply Center Richmond construct a rain garden (bio-filtration area) to trap and filter runoff from an adjacent parking lot.



The roof built over Hopewell Regional Water Treatment Facility sludge pad reduced stormwater contamination by nearly eliminating sludge runoff.

*"Stormwater management improvements at the Hopewell Regional Water Treatment Facility not only significantly reduced our facility's stormwater pollution but also had a range of secondary benefits including improved worker safety and over \$600,000 in increase revenue."*

Jeanie Grandstaff,  
Hopewell Regional Water  
Treatment Facility

## Background:

Stormwater runoff is the nation's most common cause of water pollution and causes significant pollution problems in the Chesapeake Bay. Stormwater discharges, often containing high levels of toxic chemicals and nutrient pollution, are generated by water runoff from land and impervious areas, including agricultural and recreational fields, material storage areas, paved streets, parking lots, and building rooftops. Some of these are regulated in NPDES permits as their final discharge is through industrial or municipal storm drain systems. Other stormwater discharges are not yet regulated as they discharge by sheet flow versus through a collection system or there are complicating technical, legal, or political considerations.

## Quick Facts: Stormwater

- **Polluted stormwater destroys animal/plant habitats and threatens public health.**
- **The amount of stormwater runoff can be lessened by reducing impervious surfaces; dispersing versus centralizing stormwater conveyance and collection; and increasing groundwater infiltration.**
- **The quality of stormwater runoff can be improved by creating bio-filtration areas (e.g., rain gardens, stream buffers) designed to filter runoff from impervious sites.**
- **The primary approaches to controlling stormwater are through the use of best management practices (BMPs), smart growth techniques, and low impact development methodologies. A national menu of stormwater BMPs can be found at: <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm>.**

## The Challenge:

While it is possible to regulate runoff from point-sources, reducing non-point source pollution is a major challenge as it requires unregulated, voluntary steps by organizations and individual citizens.

## A Solution: Leveraging the V-REMS Partnership's Goal of Voluntarily Improving the Regional Environment beyond Regulatory Requirements

V-REMS partners have committed to work individually and together to voluntarily reduce their point and non-point source stormwater pollution. Through V-REMS meetings and teleconferences, partners share with each other successful BMPs, new technology options, and lessons learned about reducing stormwater pollution from their respective facilities. This exchange of information equips partners to educate their own organizations about the impacts of stormwater and build the business case for taking action to implement stormwater solutions.

The Virginia Regional Environmental Management System (V-REMS) partnership joins over 35 public (federal, state, county, and local) and private organizations in the greater Richmond area to address complex community and environmental issues through an innovative partnership approach. The partnership strengthens community relationships and reduces air, water, and waste emissions, promoting environmental sustainability in the areas where

its partners operate. Stormwater activities are just some of the many environmental initiatives that V-REMS pursues. More details on the V-REMS stormwater activities and additional fact sheets profiling V-REMS efforts related to Diesel Bus Retrofits, E-85 Fueling Stations, and Energy Efficiency can be found at <http://www.peercenter.net/RegionalCollaborations.cfm>.

*“Ukrop’s Super Markets stormwater management efforts have helped us underscore the company’s commitment to improving the regional environment. V-REMS has been an excellent forum for helping us educate other organizations about positive steps they can take towards reducing their stormwater impacts.”*

Pat Hadden,  
Ukrop’s Super Markets



Ukrop's Super Markets bio-retention area traps and filters runoff from the store's parking lot.

### Accomplishments\*:

The following are just a few examples of successes from stormwater BMPs that V-REMS partners have implemented individually and then shared with V-REMS partners. V-REMS Partners are encouraged to replicate each other's successful stormwater activities at their respective facilities.

- Eight V-REMS partners received Business for The Bay Excellence Awards in part for their “outstanding work in pollution prevention programs to help protect the Chesapeake Bay and its rivers.”
- Ukrop’s Super Markets installed a large bio-retention area acting as a filter for stormwater runoff, in front of its Forest Hill Avenue store in Richmond. As part of the filter media they even used compost material from their central kitchen compost operation.
- Learning from Ukrop’s bio-retention area experience, the Defense Supply Center Richmond (DSCR), assisted by 15 boy scouts, was inspired to build three rain gardens (bio-filtration areas) along the edge of a large parking lot and a vehicle maintenance building.
- The Hopewell Regional Water Treatment Facility built a roof over its sludge storage pad to reduce stormwater contamination, enhance sludge handling, and improve worker safety. The improvements increased the efficiency of the plant’s incinerator, allowing it to burn its own sludge more efficiently and accept waste from external sources – increasing revenue by \$600,000 annually.
- More than six different V-REMS partners have instituted improved management policies for their hazardous chemicals or eliminated use of these chemicals. If spilled into stormwater drains that lead to the Chesapeake Bay, these chemicals could have severe impacts on the marine environment. Partners’ improvements reduce the risk that toxic chemicals will spill and enter the Bay.
- Fort Lee realized over a 65% reduction in the generation of hazardous waste, an 85.4% decrease in pesticide usage, and 26% reduction in water usage. Fort Lee has implemented over 30 BMPs ranging from landfill cap projects to bio-retention areas and stormwater separators.
- The City of Richmond implemented a discarded gas tanks recycling program which reduces the amount of residue oil in the tanks from coming into contact with stormwater.

\*In some cases, the accomplishments identified are the results of individual V-REMS partners’ voluntary efforts. In others, environmental projects were already in effect when organizations joined V-REMS and experiences were shared.

### Stormwater Activities: Metrics of Success

V-REMS partners’ stormwater activities are ongoing and these metrics will be updated as mitigation efforts are undertaken. Due to the complexity of hydrological processes, stormwater mitigation is particularly difficult to quantify in terms such as “gallons filtered” or “gallons diverted from stormwater drain.” Therefore, the metrics captured here focus on input metrics. The process for calculating and evaluating the metrics of success will undoubtedly evolve—suggestions are welcome.

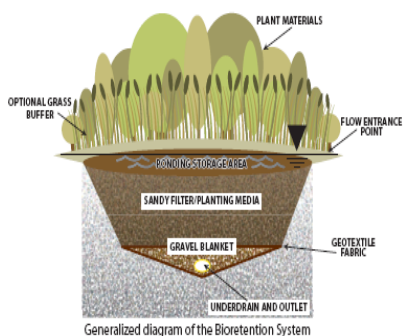
- **Over 50 voluntary BMPs implemented.**
- **5 bio-filtration areas built.**
- **\$600,000 saved due to stormwater improvements.**
- **25,000 people educated about the importance of stormwater management.**
- **Over 15 V-REMS partners working on stormwater efforts.**

#### V-REMS Partnership Sponsors:

Defense Supply Center Richmond, Defense Logistics Agency, DoD  
White House Council on Environmental Quality

#### For More Information:

<http://www.peercenter.net/RegionalCollaborations.cfm>  
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Generalized diagram of the Bio-retention System

A profile of a layered bio-retention area like the one installed at Ukrop’s Super Markets portrayed in the picture at the top.